PATENT ABSTRACTS OF JAPAN

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CLAIMS

[Claim(s)]

[Claim 1] The nonaqueous battery characterized by using metal multiple oxide expressed by empirical formula $Li_xB_yNi_zCo_wO_a$ (wherein, $0<x<1.3$, $y>0$, $0<=w<z$, $y+z+w=1$, and $1.8<=a<=2.2$.) as a positive active material in the nonaqueous battery using the material which can intercalate or de-intercalate lithium ion or lithium metal

[Claim 2] The nonaqueous battery according to claim 1 whose y in the aforementioned empirical formula is 0.01-0.3.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0006] [The purpose of this invention]

To offer the highly safety nonaqueous battery which seldom carries out unusual generation of heat even when cell temperature rises, since the reaction start temperature of a positive active material and the electrolytic solution is high.

[0015] (Example 1)

The flat type nonaqueous battery (this invention cell) was produced.

[0016] [Production of positive electrode]

LiOH, B_2O_3, $Ni(OH)_2$, $Co_2(OH)$ are mixed at the rate of the atomic ratio 1.0 : 0.01 : 0.5 : 0.49. It was calcinated at 800 degree C for 20 hours, and is empirical-formula $LiB_{0.01}Ni_{0.5}Co_{0.49}O_2$.

[0017] Subsequently, this cathode powder, the acetylene black as an electric conductive agent, and the fluorine resin powder as a binder were mixed at 90 : 6 : 4. It was pressed at 2 t/cm^2,

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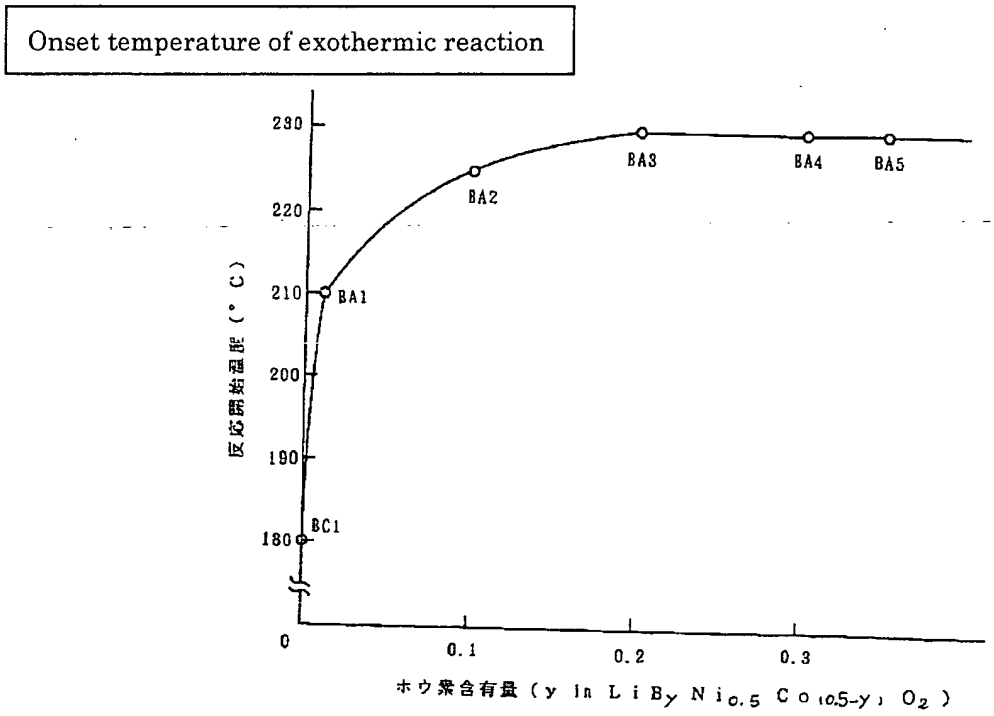
and was dried at 250 degree C. The disc-like positive electrode with a diameter of 20mm was produced. In addition, the stainless steel plate (SUS304) was used as positive-electrode current collection field.

[0023] (Example 2)
Empirical-formula $LiB_{0.1}Ni_{0.5}Co_{0.4}O_2$
[0024] (Example 3)
Empirical-formula $LiB_{0.20}Ni_{0.5}Co_{0.3}O_2$
[0025] (Example 4)
Empirical-formula $LiB_{0.30}Ni_{0.5}Co_{0.2}$
[0026] (Example 5)
Empirical-formula $LiB_{0.35}Ni_{0.5}Co_{0.}$
[0027] (Example of a comparison)
Empirical-formula $LiNi_{0.5}Co_{0.5}O_2$
[Drawing 2]

[Drawing 3]



Discharge Capacity